

Spot Safety Project Evaluation

Project Information

Order ID: 41000030290

Project ID: 06-07-201

Location: US 401 at SR 1593 (Hoke Loop Road) - Grassy Branch Rd

County: Cumberland

City: Fayetteville

Division: 6

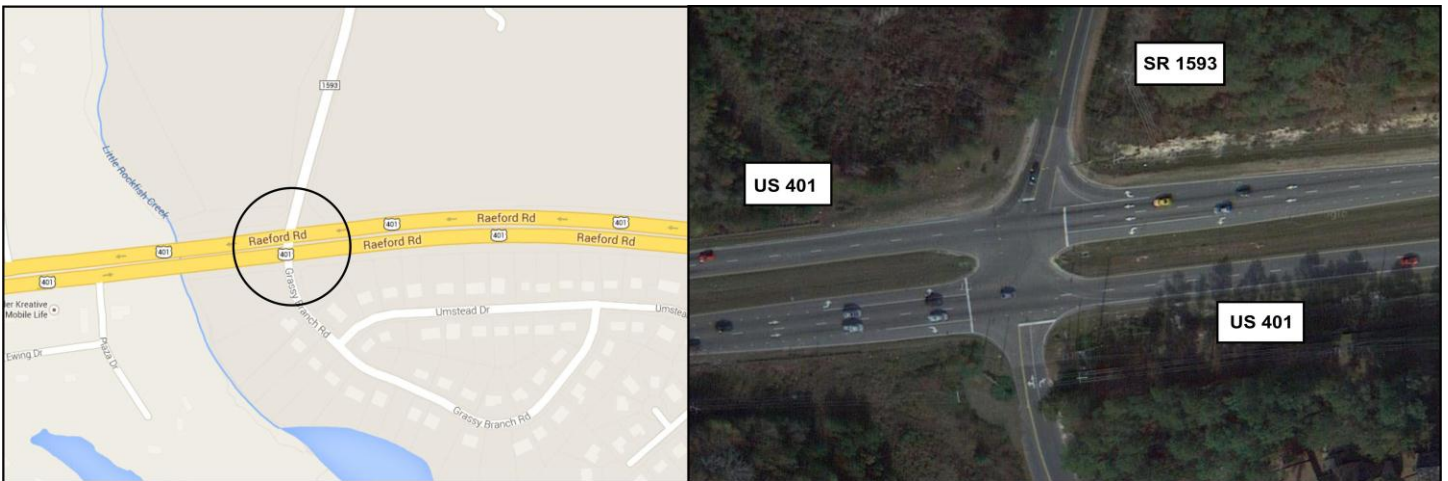
Signal ID: 06-1290

Countermeasure: Install signal (2009)
Install flashing yellow arrow (FYA) (2013)

Project Completion: January 29, 2010

Project Cost: \$115,000

Map and Aerial (from Google Maps, Google Coordinates are - 35.032755,-79.081673)



Naive Before and After Analysis

Before Period: May 1, 2005 through February 28, 2009 (3 years, 10 months)

Const. 1 Period (Signal): March 1, 2009 through May 31, 2009

After 1 Period: June 1, 2009 through March 31, 2013 (3 years, 10 months)

Const. 2 Period (FYA): April 1, 2013 through May 31, 2013

After 2 Period: June 1, 2013 through August 31, 2014 (1 year, 3 months)

Analysis Criteria: Treatment data consisted of all crashes within 150 feet of the subject intersection for the US 401 and SR 1593 approaches.

Target Crashes: Frontal Impact Crashes. Please note that Frontal Impact Crashes were the target crashes for the applied countermeasure. Frontal Impact crashes include: Left turn, same roadway; Left turn, different roadways; Right turn, same roadway; Right turn, different roadways; Head on; and Angle.

<u>Treatment Information</u>	Before 3 yrs., 10 mos.	After 1 3 yrs., 10 mos.	After 2 1 yr, 3 mos.
Total Crashes	36	47	12
Total Crashes Per Year	9.40	12.27	9.60
Total Severity Index	4.91	6.23	5.32
Target Crashes	20	31	6
Target Crashes Per Year	5.22	8.09	4.80
Target Crash Severity Index	5.81	7.50	5.93
Volume (2007, 2012, 2014)	25,300	28,400	23,100

<u>Injury Crash Summary (Per Year)</u>	Before 3 yrs., 10 mos.	After 1 3 yrs., 10 mos.	After 2 1 yr, 3 mos.
Fatal injury Crashes	0	0	0
Class A injury Crashes	0	0.26	0
Class B injury Crashes	2.09	2.35	1.60
Class C Injury Crashes	2.87	3.66	4.0
Property Damage Only	4.44	6.01	4.0

<u>Additional Information</u>	Before	After 1	After 2
Left Turn, Different Roadway (Target)	10	5	0
LTDR Crashes Per Year	2.61	1.31	0
Left Turn, Same Roadway (Target)	6	24	6
LTSR Crashes Per Year	1.57	6.27	4.8
Southbound Rear- End Crashes	8	3	2
SB Rear Ends Per Year	2.09	0.78	1.6

Overall Summary Results

From Before to After 1 (Signal)

From After 1 to After 2 (FYA)

Total Crashes per year:	+ 31 %	(increase)	- 22 %	(reduction)
Total Crash Severity:	+ 27 %	(increase)	- 15 %	(reduction)
Target Crashes per year:	+ 55 %	(increase)	- 81 %	(reduction)
Target Crash Severity:	+ 29 %	(increase)	- 41 %	(reduction)
Volume:	+ 12 %	(increase)	- 19 %	(reduction)

Additional Summary Results

From Before to After 1 (Signal)

From After 1 to After 2 (FYA)

LTDR Crashes per year:	- 50 %	(reduction)	- 100 %	(reduction)
LTSR Crashes per year:	+ 299 %	(increase)	- 23 %	(reduction)
SB Rear Ends per year:	- 63 %	(reduction)	+ 105 %	(increase)

Items for Discussion/Concerns

This intersection showed a decrease in Left Turn, Different Roadway crashes in both after periods. Left Turn, Same Roadway crashes had a large increase after the installation of the signal, but were reduced with the flashing yellow arrow implementation.

Data Prepared For

The Traffic Safety Unit *of the*
Transportation Mobility and Safety Division *of the*
Division of Highways *of the*
North Carolina Department of Transportation

Data Prepared By

Principal Investigator:	Elizabeth Scott, EI
Work Group/Consultant:	Stantec Consulting Services Inc.
Date:	October 16, 2014

SS# 06-07-201
Order#41000030290
Cumberland County
Before Period
5/1/05 - 2/28/09

LEGEND

MOVING VEHICLE

PARKED VEHICLE

PARKING VEHICLE

MOVABLE OBJECT

HEAD ON

REAR END

RAN OFF ROAD

DAYLIGHT CRASH

NIGHT CRASH

ANGLE

TURNING

BACKING

SIDESWIPE

INJURY

FATALITY

9 MPH OR LESS

10 MPH TO 19

20 MPH TO 29

30 MPH TO 39

40 MPH TO 49

50 MPH TO 59

60 MPH TO 69

70 AND UP

SPEED UNKNOWN

A ANIMAL

P PEDESTRIAN

B BICYCLE

T TRAIN

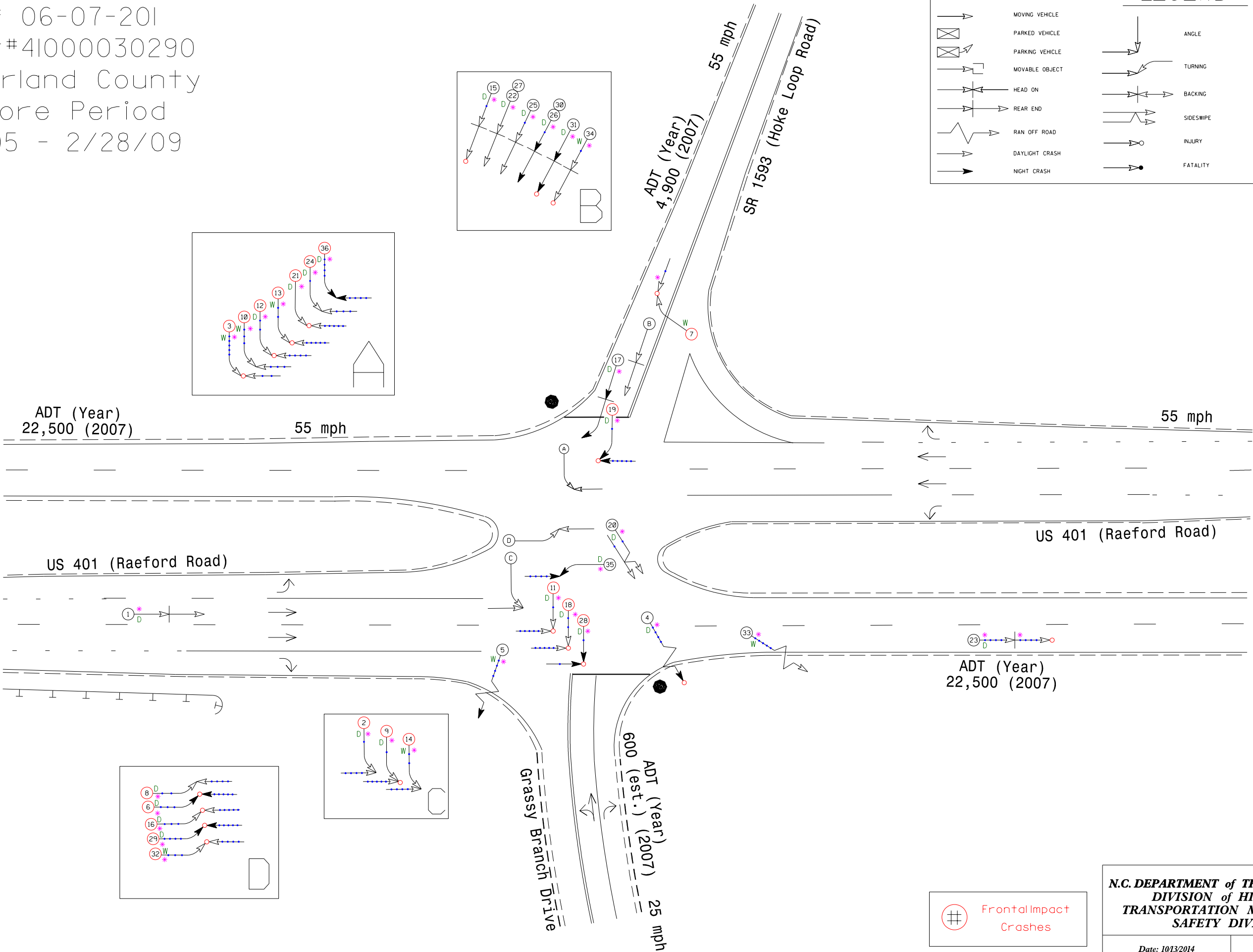
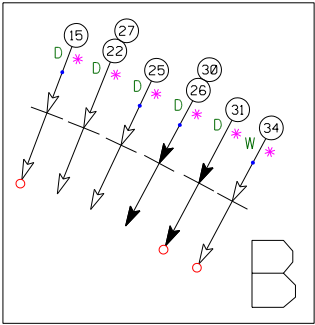
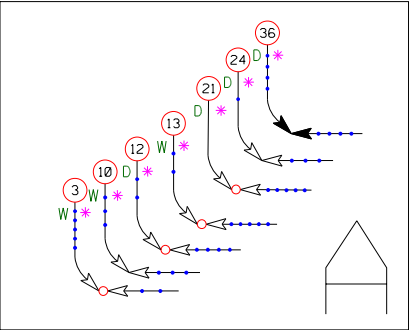
* DRIVER AT FAULT

D DRY

W WET

I ICY OR SNOWY

O Other



Frontal Impact
Crashes

N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and
SAFETY DIVISION

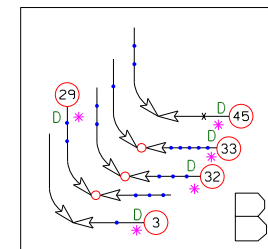
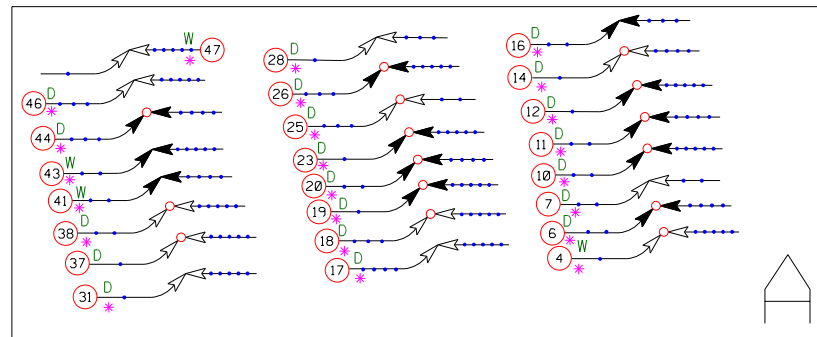
Date: 10/13/2014

Prepared By: ESS

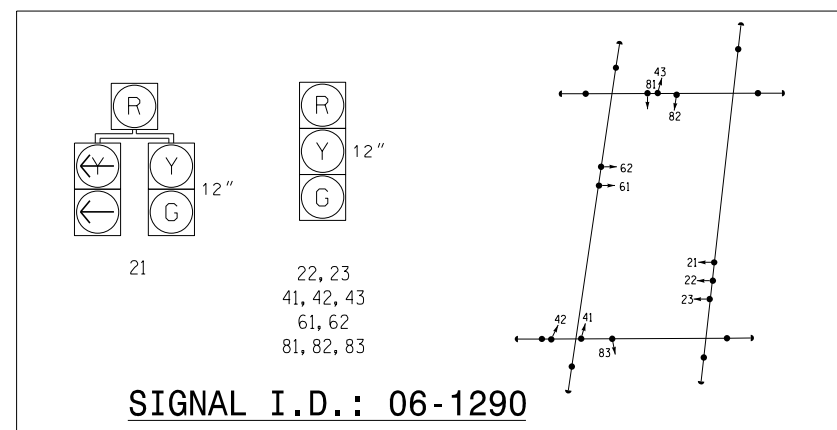
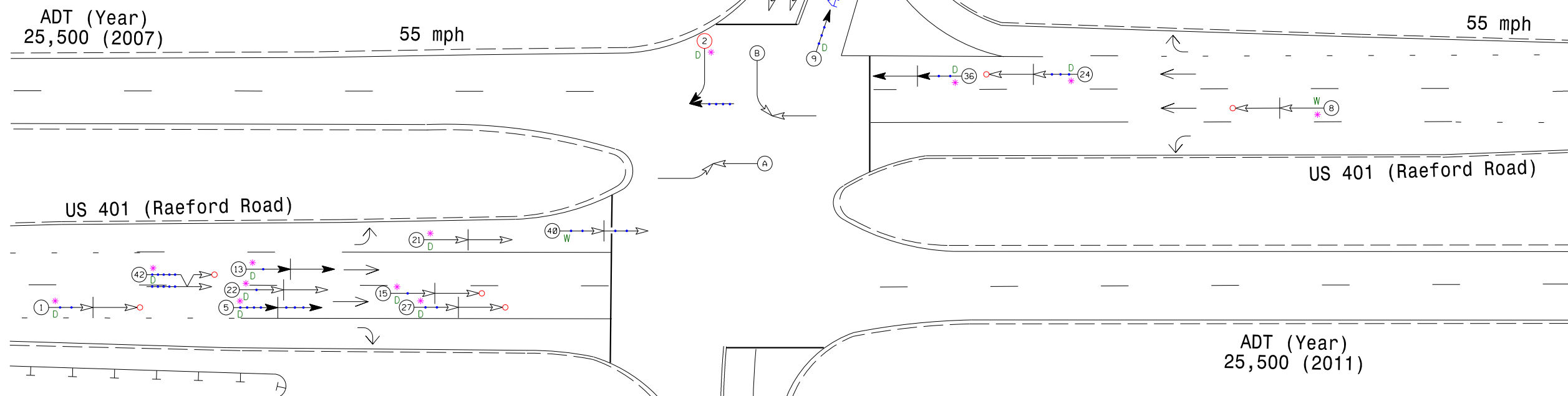


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SS# 06-07-201
Order#41000030290
Cumberland County
After 1 Period
6/1/09 - 3/31/13



LEGEND			
	MOVING VEHICLE		ANGLE
	PARKED VEHICLE		TURNING
	PARKING VEHICLE		BACKING
	MOVABLE OBJECT		SIDESWIPE
	HEAD ON		INJURY
	REAR END		FATALITY
	RAN OFF ROAD		9 MPH OR LESS
	DAYLIGHT CRASH		10 MPH TO 19
	NIGHT CRASH		20 MPH TO 29
			30 MPH TO 39
			40 MPH TO 49
			50 MPH TO 59
			60 MPH TO 69
			70 AND UP
			SPEED UNKNOWN
			A ANIMAL
			P PEDESTRIAN
			B BICYCLE
			T TRAIN
			* DRIVER AT FAULT
			D DRY
			W WET
			I ICY OR SNOWY
			O Other



Frontal Impact
Crashes

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TRANSPORTATION MOBILITY and
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Date: 10/13/2014

Prepared By: ESS

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SS# 06-07-201
Order#41000030290
Cumberland County
After 2 Period
6/1/13 - 8/31/14

LEGEND

→

MOVING VEHICLE

⊠

PARKED VEHICLE

⊠↗

PARKING VEHICLE

→┐

MOVABLE OBJECT

→┐┐

HEAD ON

→┐┐

REAR END

→┐┐

RAN OFF ROAD

→

DAYLIGHT CRASH

→

NIGHT CRASH

↘

ANGLE

→↘

TURNING

→┐┐

BACKING

→┐┐

SIDESWIPE

→○

INJURY

→●

FATALITY

→

9 MPH OR LESS

→

10 MPH TO 19

→

20 MPH TO 29

→

30 MPH TO 39

→

40 MPH TO 49

→

50 MPH TO 59

→

60 MPH TO 69

→

70 AND UP

→

SPEED UNKNOWN

A

ANIMAL

P

PEDESTRIAN

B

BICYCLE

T

TRAIN

*

DRIVER AT FAULT

D

DRY

W

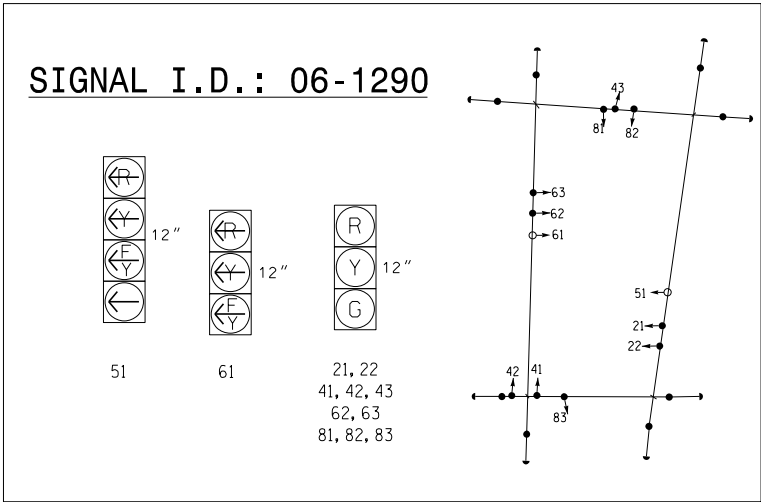
WET

I

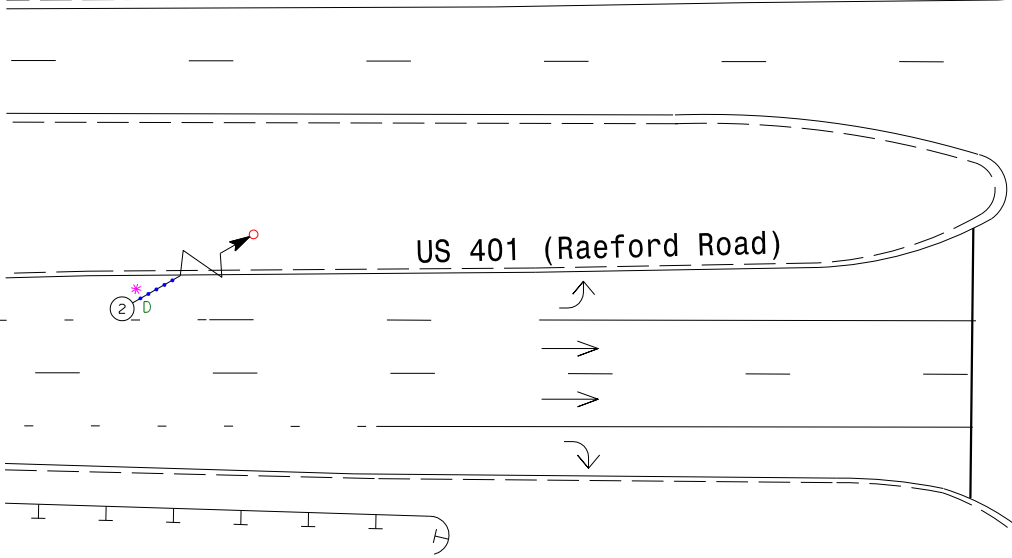
ICY OR SNOWY

O

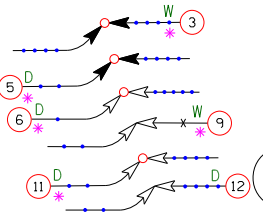
Other



ADT (Year)
21,000 (2014) 55 mph



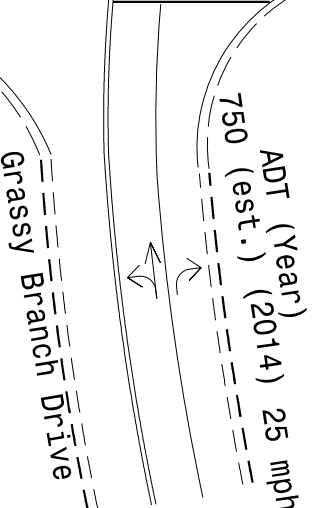
US 401 (Raeford Road)



55 mph

US 401 (Raeford Road)

ADT (Year)
21,000 (2014)



ADT (Year)
750 (est.) (2014) 25 mph

Grassy Branch Drive



*Crash 9 is depicted as a LTSR crash as this is the movement that caused the vehicle to depart the roadway

Frontal Impact
Crashes

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DIVISION of HIGHWAYS
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